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St. Louis, February, 1880, illustrated by three plates.—In the *Bulletin* of the Torrey Botanical Club, for April, Mr. F. Wollé gives a fourth list of fresh water algæ mostly found in the vicinity of Bethlehem, Pennsylvania, of which at least ninety are new to the United States flora, and a number are described as new to science.—A communication on the “influence of electricity upon the growth of plants,” was presented by Mr. J. M. Batchelder, of Boston, to the Club. The author sowed “pepper-grass” seeds on cotton floating on the surface of distilled water contained in two tumblers. One of the tumblers was insulated, and in it was placed a coiled copper wire, the other extremity of which communicated with a revolving belt. Both tumblers were placed under the same conditions of light and heat. It was found that the electricity retarded both the germination of the seeds and the subsequent growth of the plants to a remarkable degree. At the conclusion of his experiments, Mr. Batchelder discovered that while the roots of the plants in the non-electrified water were growing normally, those submitted to the action of electricity were twisted and coiled in an intricate manner among the fibres of the cotton.—A new species of *Potamogeton* (*P. illinoensis*) is described by T. Morong, with notes on other species in the *Botanical Gazette*, for May. In the June number, G. Engelmann notices the vitality of the seeds of serotinous cones, and E. L. Greene publishes notes on certain silkweeds.

ZOOLOGY.¹

THE HERRING OF THE PACIFIC COAST.—The herring fishery is scarcely so important upon the coast as upon those of the Atlantic. How much of this is due to the herrings, and how much to the human inhabitants of the region is hard to tell. The species of *Clupea*, commonly known here as the herring, *Clupea mirabilis*, is, I believe, smaller than the Atlantic herring, and hitherto the cured fish has not been able to compete with the Eastern article. This, however, is not due to any scarcity of the fish, which occurs in shoals all along the coast at certain seasons, and is always abundant in the more northern regions. The herring found along the coast of the United States are said to be much inferior to those taken between Puget sound and Oonalashka.

Some have been cured in Humboldt bay, but Humboldt herring are said to be very poor. The Alaska Fish Company have put some up at Oonalashka, which, having been very carefully cleaned and prepared, were sold to restaurants and oyster shops for lunch herring, and the Cutting Packing Company salt some at Sitka. The Indians press the whole fish for oil, and the spawn is kept to form part of their winter supply of food.

Besides the herring, we have another *Clupea*, *C. sagax*, com-

¹ The departments of Ornithology and Mammalogy are conducted by Dr. ELLIOTT COUES, U. S. A.

monly called the sardine. This species comes into market in small quantities about April, becomes abundant in July and August, and appears occasionally at least as late as the beginning of November. Those brought in in April, May and June are chiefly young fish.

The herring begins to arrive in our markets at the end of September, and will, I am told, be in season during the rainy season. All that are brought to San Francisco are eaten fresh.

The anchovy, *Engraulis ringens*, is exceedingly abundant in this bay, and it is to be wondered at that more persistent efforts have not been made to preserve them, or to make sauce from them.

The "Columbia river sardines" occasionally sold in the shops, are not sardines in any sense. Those I have seen are the Eulachon, *Thaleichthys pacificus*, a small fish of the salmon tribe. The Eulachon is very oily, and probably makes very palatable potted fish, but one can't make a sardine out of a salmon.

The young of either of the species of *Clupea* would make real sardines, or at least the nearest thing to them possible on this coast. The sardines of commerce are the young of the pilchard, *C. pilchardus*. These three species are the only true herrings found on this coast, but the related and world-wide species, *Albula vulpes*, the lady fish, is tolerably common farther south, and occasionally puts in an appearance in our markets among the fish from Monterey.

The anchovy can be readily known by its comparatively very large mouth, the under jaw of which is much shorter than the upper; but the two *Clupeæ*, though seen to be quite different when placed side by side, are not so easy to distinguish without examination. I will give a few of the principal distinguishing characters:

Clupea sagax.—Body thick, elongate, depth to length as one to six; thickness two-thirds of depth; head slightly more than one-fifth of total length; lower jaw scarcely projecting; no teeth in mouth, no denticulations on lower margin of maxillary; operculum striated; anterior margin of dorsal nearer the tip of the snout than to the origin of the caudal; area included between the ridges on the top of the head narrow, pointed posteriorly; a row of dark spots on each flank.

C. mirabilis.—Body short, compressed, depth to length more than 1.5, thickness about two-fifths of depth; head not more than one-fifth of total length; lower jaw considerably projecting; a few small teeth in mouth, lower edge of maxillæ denticulated; operculum smooth; anterior margin of dorsal fin slightly nearer to the origin of the caudal than to the tip of the upper jaw; area included between the ridges on the top of the head an elongated ellipse; no spots along the sides.

—W. N. Lockington.

RECENT ARTICLES ON CRUSTACEA.—About a year and a half ago a request was sent to the various museums of the world by Drs. Schiödte and Meinert, of Copenhagen, requesting the loan of all specimens of Cymothoidæ, for the purpose of monographing the group, and the first portions of the monograph have just ap-

peared.¹ From it we learn that only two American museums contributed, the Peabody Academy of Science at Salem, Massachusetts, and the Museum of Comparative Zoölogy, at Cambridge. The first of these papers treats of the Cirolanidæ, which closely resemble the true Cymothoas, but which differ in having the mouth parts adapted for eating flesh. Three genera and nine species are characterized, of which the genera *Barybrotes* and *Tachæa*, and the species *B. indus*, *B. agilis*, *T. crassipes*, *Corrallana collaris*, *brevipes*, *nodosa* and *hirsuta* are new. Each species is described as far as the specimens permitted, under three heads—male, virgin, and ovigerous females—the difference between the sexes and between the two forms of the same sex being very striking. In the second paper the *Ægidæ* are monographed. These Crustacea lead a parasitic life, generally attaching themselves to the roof of the mouth of fishes, and with their modified mouth parts, which form a sucking tube, living on the blood of their hosts. These forms are described under the following generic and specific names, those starred (*) being new: *Æga tridens*, *hirsuta**, *crenulata*, *webbii*, *stræmii*, *rosacea*, *serripes*, *psora*, *deshayesiana*, *antillensis**, *magnifica*, *monophthalma*, *nodosa**, *ophthalmica*, *tenuipes**, *dentata**, *incisa**, *artica*, *ventrosa* and *spongiophila*, *Rocinela danmonensis*, *insularis**, *dumerilii*, *maculata**, *americana**, *orientalis**, *australis**, *signata** and *aries**, *Alitropus typus* and *foveolatus**. Full descriptions are given of the male, virgin, ovigerous female and the young. The plates are engraved by Lövendal, the best living scientific engraver, and are simply beautiful; the text is in Latin, which is far better for the man of average education than would be the native language of the authors, and in short, the articles are models of scientific work.

Mr. Edward J. Miers has at various times since 1874 published several valuable papers on the Crustacea, some of which have been noticed in the pages of the NATURALIST. A number of these papers have been especially valuable from the fact that they embraced all the known species of certain families and genera. His twenty-third paper has just been received, and is of the same character as his "Revision of the Plagusiniæ," "Notes on the Peneidæ," "Revision of the Hippideæ" and "On the Classification of the Maioid Crustacea." In the present paper² the Mantis shrimps are monographed, fifty-three species being enumerated, distributed in six genera. There is one feature of Mr. Miers's work, which is to be especially commended; in these days of much species making, his tendency is just the reverse, and we

¹ De Cirolanis *Ægas* simulantibus commentati brevis scripserunt. J. C. Schiötte et Fr. Meinert. Naturhistorisk Tidsskrift III, XII, pp. 279-302, Pls. III-v (1879.)

Symbolæ ad monographium Cymothoarum Crustaceorum Isopodum Familiæ scripserunt J. C. Schiötte et Fr. Meinert.

I *Ægidæ*. l. c. pp. 321-414 Pls. VII-XIII (1879). From the authors.

² On the Squillidæ. Annals and Magazine of Natural History for January and February, 1880, pp. 49, Pls. I-III.

think generally that he is right. As an instance of his onomastic spirit (to coin a word), the fifty-three species of Squillidæ have been described under seventy-six different specific names. The new species described are *Lysiosquilla brazieri*, *gonodactylus*, *excavatus* and *9-furcicaudatus*. A new genus *Septosquilla* is created for *Squilla schmeltzii* A. M.-Edw. and *Chloridella* is substituted for *Chlorida*, preoccupied. The plates are fair.—*J. S. Kingsley*.

ANOTHER BLACK ROBIN.—In the Bulletin of the Nuttall Ornithological Club for January I described a case of melanism in *Turdus migratorius*, the specimen being taken from a nest at Freehold, New Jersey, last summer. I have lighted on another specimen taken from a nest the same season, in Hudson county, New Jersey. In this instance the color is more intensely black, and the neck has considerable of that play of metallic luster, of a purple hue in the varying light, which we see in the crow-black-bird, *Quiscalus purpureus*. The Freehold specimen is of a sooty-hue, not unlike the color of the rusty grackle, *Scolecophagus ferrugineus*. The Hudson county specimen was owned by a saloon keeper near Jersey City, who set a fancy price on his bird, and failing to find a purchaser, at last accounts, was trying to raffle off his *rara avis* at two dollars a chance.—*S. Lockwood, Freehold, New Jersey*.

OCCURRENCE OF THE BOHEMIAN WAX-WING IN WESTERN WASHINGTON TERRITORY.—The past winter has been an unprecedented one, snow having fallen to the depth of from two to three feet in the valleys—the lowest observed temperature was $+ 8^{\circ}$, which, however, was not as cold as before known. Coincident with the snow, appeared for the *first time in the history of the country*, the Bohemian wax-wing (*Ampelis garrulus*).

Many flocks of these beautiful birds were seen in various parts of the country, the greatest number observed in one flock was about two hundred. They were feeding mostly on the capsules of the wild rose (*Rosa fraxinifolia*), which are abundant here, the crops of some I dissected were literally crammed with these seed vessels.

Since the first of February none have been seen, hence I conclude that, with the disappearance of the snow, they have retired to colder regions.—*J. K. Lum, Lewis county, Washington Territory*.

ROSE-BREADED GROSBEAK AND COLORADO POTATO BEETLE.—Regarding this useful and pleasing bird, the following appeared in the *New York Weekly Tribune*, of February 11, 1880, to wit: "Prof. C. E. Bessey, of the Iowa Agricultural College, several years ago observed the rose-breasted grosbeak's habit of feeding on the Colorado potato beetle * * *. Its useful propensity was again remarked during the past year by a correspondent of

Forest and Stream at Coralville, Iowa, and by another at Ames in the same State." In a small aviary which I keep for better observing the habits of our native and several foreign song birds, the same preference in the selection of food was noticed by myself. September 18, 1879, I found in the flower bed of my yard, a potato beetle (*Doryphora decem-lineata*), which I intended to give to my cardinal grosbeak (*Cardinalis virginianus*). After placing it in the cage, it was with difficulty that I prevented the rose-breasted grosbeak (*Hydemeles ludoviciana*) from seizing it at once. Knowing the potato beetle to be poisonous, at least to the genus *Homo*, I did not care to try experiments with the tame rose-breasted grosbeak, my sweetest songster in the aviary. I had often before noticed, that the cardinal grosbeak had a fondness for beetles, and naturally supposed that he was better qualified to judge of the wholesomeness of the food offered.

The latter bird watched the beetle very attentively as it crept over the floor, but seemed to be in no hurry to capture it as he would other beetles. Finally he took hold of and crushed it between his mandibles. He tried to swallow it, but not finding the taste very appetizing, he gladly yielded up the unsavory morsel to the repeated snatchings of the rose-breasted grosbeak. After crushing it into a shapeless mass, which occupied but a few seconds, he carefully stowed it away. I thought he seemed not to enjoy the taste very much, as he gravely shook his handsome head as if in a doubtful mood. Wiping off his bill, he immediately afterwards proceeded to eat a quantity of cultivated portulaca that I offered as a precautionary measure. Portulaca stems and leaves contain much mucilage, which I thought would be an antidote to the possible acrid quality of the juice of *Doryphora decem-lineata*. The usual result of poisoning from handling these crushed beetles, as well as from inhaling the fumes arising from vessels in which *D. decem-lineata* have been scalded, has been likened to serpent and scorpion-poisoning. Where death followed, the blood would become disorganized the same as from septæmia. However, in the case of the birds no evil effects were noticed. In mankind, idiosyncrasy favors the absorption of the volatile doryphora poison.

In looking over my notes, I find also that the cardinal grosbeak is fond of the rose beetle (*Macrodactylus subspinosus*), a species of an ill-smelling bug frequently found on the fruit of raspberries, and centipedes he always devoured, whereas none of the others would go near them. Sow bugs (*Oniscus asellus* L.) were eaten by the cardinal grosbeak and yellow-breasted chat (*Icteria virens*). — *Richard E. Kunze, New York.*

CAN SNAILS MEND THEIR SHELLS.—Having some doubts whether snails are able to mend their shells when broken, I procured a full grown water snail (*Lymnæa elodes* Say), and with a pair of pinchers broke out a semi-circular piece, the size of a half dime, and then

placed it in a tub of water containing aquatic plants. Everything being in order, I took notes of changes as they occurred. At the end of three days no change had taken place in the size of the aperture, but the sharp edges where the shell was broken, was somewhat rounded, showing plainly that the work of repair was going on. At the end of six days the opening was perceptibly smaller. At the end of two weeks so much progress had been made that the opening was one-third closed, and the line where the patching commenced, although very smooth, could be distinctly seen. I continued to watch my pet from day to day with more and more interest, until finally at the end of six weeks the work was completed, and to all appearances as smooth as it was before it was broken. It was very interesting to watch its movements, it would make a circuit around the side of the tub, and then push off toward the middle, where the food plant was anchored, and feed awhile, and then return and make another circuit. Occasionally it would disappear for some time to tend to duties below, probably to lay eggs, as I found them very numerous on the side of the tub, and in the fall when the tub was emptied, scores of young snails were found sticking to the sides.—*Robert Bunker.*

VICTIMIZING RATTLESNAKES.—A short time since a gentleman related to me a novel way of depriving the rattlesnake of its poisonous powers. In parts of the West where this species (*Crotalus confluentus*) is more common, and most annoying, a person attaches a silk handkerchief to a stick, and holds it over the reptile. The instant it darts its fangs into the silk, the handkerchief is jerked up, and the fangs removed. After this the snake is of course powerless, and may be used in any desirable way. I have never seen the experiment put in effect, and give it for what it is worth.—*W. H. Ballou.*

BYTHINIA TENTACULATA LINN.—In June, 1879, I discovered *Bythinia tentaculata* Linn., at Oswego, New York. A little later it was identified in the Champlain canal, at Waterford and Troy, and this spring I have found it plentiful in the Erie canal, at Syracuse, New York. In some localities it is already abundant, and will soon be a widely distributed shell. It must have been introduced from Europe some time since, but had hitherto escaped notice.—*W. M. Beauchamp.*

COLOR VARIETY OF THE CHIPMUNK.—A curious color variety of *Sciurus hudsonius* Pallas, was brought to us not long ago, and has seemed worthy of a brief notice. That it is a variety of *S. hudsonius* is unquestionable. In general color it is less brown than any specimens in our collection. A band of rather dull reddish-brown runs along the median line of the back from the top of the head, just behind the eyes, to the base of the tail. This tinge dies out as it proceeds toward the lateral parts of the body, and

is utterly wanting on the legs. The white color of the under side of the body is distributed as is usual in this species.

The tail is narrow and not at all bushy, and reaches about to the neck of the specimen; it is white with a very few reddish hairs on the upper surface of the part nearest the body. A very few black hairs may also be seen very sparingly scattered throughout.

Two specimens of this variety were observed in the trees of Middletown, and one of these, captured in a trap set for rats, is the individual now before me.—*H. L. Osborn.*

FEROCIOUS TENDENCIES OF THE MUSKRAT.—It is possible that others have commented on the unnatural and ludicrous attacks of the muskrat (*Fiber zibethicus*) on man. However that may be, I have some incidents in point which may serve to throw light on the matter.

I was sauntering along a prairie road just out of Boone, Ia., one night during the past winter. There was no snow on the ground and the moon was just glimmering through the clouds. Of a sudden I was startled by the appearance of some animal from the long grass by the wayside, which dashed up my leg. I knocked it off, picked up a frozen piece of mud and broke its leg. Again it made a rush for me, and another piece of mud sent it rolling over. I took hold of its tail during this little scene, and ended the matter by giving its head a severe bump on the ground. When I had access to more light I found that it was a full-grown muskrat of enormous size. I can neither account for its attack nor appearance there. The previous summer season had dried up all the sloughs and there was no water in the vicinity. The houses of these animals had been deserted for some time previous, and nowhere on the prairies had I been able to find one with any inhabitants (they build in the sloughs of western prairies extensively). Alone and well away from its most natural element it had attacked me without provocation. The matter led to an inquiry among the farmers. The general statement was to the effect that considerable fun and some trouble was had with this species during each hay time, as they did not hesitate, when out of the water, to ferociously attack man or beast, with seldom any damage. One man related, however, that he received a severe bite in the hand from one of them, which laid him up for some time. It is either very courageous or very luny.—*W. H. Ballou.*

NESTING ENGLISH SPARROWS.—During the entire month of February, the English sparrows (*Passer domesticus*) have been busily engaged in Chicago, preparing their nests. Long before the arrival of other park birds, they have selected all the nesting boxes and hundreds of nests are completed. This is my first observation of this game being played, and I believe that it is an advantage they have taken of migrants to secure nesting places

without trouble. They may be seen any day picking straws out of the street. What our summer birds will do, or whether they will remain here or not, remains to be seen. In reference to the spread of these birds in the Western States, I have this observation: In central Iowa, are two cities, Boone, and Boonesboro, situated a mile apart. The intervening space is well trodden with roadways. During the past winter I have noticed literal thousands of sparrows on the snowless ground here, picking the seeds and scratching over the manure. They have carefully treasured up the trick of the small boy, and any attempt to pick up a stone, results in their immediate departure. So pestiferous have they become, that the State legislature of Iowa has their extermination under consideration. They use the great lines of railways for guidance West, and last spring while on my way to New York, they were seen migrating in flocks westward, all the way from Chicago to that city. In an Eastern city, I noted that one side of a beautiful brownstone church was covered to a remarkable extent with their filth. In spite of their rapid increase and filthy habits, however, I am disposed to believe that they are of *some* use.—*W. H. Ballou.*

BIRD ARRIVALS AT EVANSTON, ILL.—The arrivals of robins at Evanston, Ill., on the 12th day of February, is something unheard of in the annals of the ornithological records of this section of the country. The following is a portion of the records of *Turdus migratorius* in previous years:

1877.....	arrived February 27.
1878.....	“ March 8.
1879.....	“ March 12.
1880.....	“ February 12.

The thermometer has indicated quite a high temperature for the latitude of Evanston, about $41^{\circ} 52' 57''$, north, 42m. 18s. west longitude from Washington, and 5h. 50m. 30s. (from Greenwich), for the entire month of February, and up to the 25th, the mercury has not reached zero. On this account perhaps, the birds have remained contentedly, and their chipper is occasionally heard. About twenty specimens have been seen here. The migrations are limited up to this writing to this one species. They have not yet begun nesting in this vicinity.—*W. H. Ballou.*

GADUS MORRHUA IN FRESH WATER.¹—The catalogue below quoted includes strictly fresh-water fishes only, and such marine fishes as are frequently found in fresh water. I have, however, been somewhat perplexed by a couple of species, which are stated by C. E. Varning, a merchant in Kolding, to be caught now and then in Kolding rivulet, namely Torsk (*Gadus morrhua*), which in September and October is caught in abundance, and Tangsnarr (*Spin-*

¹Fortegnelse over de Danske Ferskvandsfiske. Ved Arthur Feddersen. Naturhistorisk Tidsskrift 3. R. 12. B. 1-2. H. 1879. Foot note on pages 69 and 70.

achia vulgaris). Indeed, in the rivulet mentioned my countryman has even himself caught or seen caught the common Kulmule (*Merluccius vulgaris*) and Pighaien (*Acanthias vulgaris*) which are not found elsewhere on the coast. The Torsk is said of late years to go quite up to the basin at Odense; in the rivulet, however it ascends scarcely beyond K rup.—*Translated by Dr. Bean, and received from Prof Baird, Secretary of the Smithsonian Institution.*

REV. MR. DALLINGER ON THE THEORY OF SPONTANEOUS GENERATION.—In a valuable paper in the Journal of the Royal Microscopical Society for February, the author records the results of a series of experiments made to determine the thermal death point of known monad germs, when the heat is endured in a fluid. He made it plain, that a temperature of 140° to 142° Fahr. is absolutely destructive of the adult monad. The spores of six monads in the case of heat endured in a fluid were killed at the following temperatures: the first were destroyed at from 267° to 268° Fahr.; a second form had its spores devitalized at 212° Fahr., *the normal boiling point of water*; but in a dry heat, it could endure 250° Fahr.; a third died at 250° Fahr. in dry and 232° Fahr. in fluid heat; the spores of a fourth form (a cerco-monad), were destroyed at 238° Fahr. in fluid heat, surviving at 260° Fahr. dry heat. There were two species that could just survive 300° Fahr. in the dry heat, but perished in fluid at 268° Fahr. and 252° Fahr., respectively. The smallest spores survived the heat best.

Mr. Dallinger thus concludes: "The bearing of these results on the deeper questions of biology is plain; at least they show on the most superficial glance, the error of assuming the abiogenetic origin of septic organisms that may have arisen in closed vessels, *because* they were heated to a sufficient temperature to destroy the adult, or to any temperature less than that *known* to be destructive of the germ. They show equally the need of enlarged and earnest work in this somewhat difficult but most fruitful field of labor. The question of the *present* origin of living things, or living matter in any form, will be most surely narrowed by degrees, and settled, so far at least as our present optical aids can carry us here. The question of 'spontaneous generation' *versus* abiogenesis, is in its final form, a question for the biologist, or rather for biology. It can avail little in the quest for truth, in this matter, to assume the issue, and work up to it; nothing is easier than this in such an inquiry. With modern students of biology, I suspect that at the beginning, the bias of the mind was towards the present or continued transition of the non-living, into the living, without the intervention of living things. This on a superficial view at least, seemed to be required by the doctrine of evolution, and at least represented my own view in approaching the question. But the *facts* were eloquent; besides which a closer study of the great

doctrine of development, shows that it by no means involves, but rather disallows, the existence of continued transformation of the not-living into the living, unless passed through, so to speak, the alembic of life. To suppose any hesitancy on the part of any truly scientific mind in receiving the evidences of abiogenesis if they could be satisfactorily shown, is too ridiculous for repetition. It would be more than weakness, however, to receive as evidence what is not such. Let *truth* come from whence it may, and point never so grimly to where it may, he would be recreant to science, who would for one moment hesitate to receive it. But not less false is it to the foundation principles of true science, to accept as true, what must constitute the roots of vast generalizations, except on evidence which no future scrutiny or analysis can shake."

THEORY OF BIRD MIGRATIONS.—I am not aware of the applicability of the following to all parts of the country, but am convinced that I have the facts in regard to the migrations of birds in Illinois. For four seasons I have carefully noted the bird arrivals in Illinois, the results of which have been published in the Chicago *Tribune* as annual reports.

In each instance noted, the first four species to arrive and which all arrived together, were the robin, meadow lark, grosfinch and bluebird. In each instance these species came with a terrific gale of hot wind from the south, which lasted some two or three days and nights. The thermometer on each occasion stood at 70° F. Now to my mind the time of migration is set by the continuance of this excessive heat and current of air.

I have two proofs of this. In 1878 there was an open winter and they did not arrive until late in the spring, though the thermometer stood generally at 30° and 40° each day. It was not until the several days of hot air with a thermometer at some 70° that they arrived.

Again, this season a hot air current came, lasting one day and part of a night, with the mercury at 70°, only a few robins came, and the migrations were not general even with this species; the other three species wisely staid away, waiting for the usual three days of hot air. I am confirmed in this opinion in the fact that in the spring of 1879 I wrote out my account of the bird arrivals for this region (Evanston, Ill.), and five days later visited Northern New York; there was four feet of snow at Oswego, and of course not a summer bird had made an appearance. It was about the first of April when the three days' current of hot air reached Oswego county, and then the birds arrived.

Migrations, then, depend, as to time, on a continuous current of hot air and high temperature, extending at least through sixty hours.

As to the route of the migrations, I coincide with the opinion

expressed at least by Theodore Jasper in his "Birds of North America," that they follow mountain ridges and water courses.—*Wm. Hosea Ballou.*

ALBINO BEAVER AND SQUIRREL.—During the past winter a white beaver (*Castor fiber*) was caught near Olympia, Washington Ter. The specimen was a large one, and remarkable for the purity of its color; the hairless tail, as well as the whole body being entirely white. The specimen here mentioned was preserved and may be seen in Olympia.

While traveling in Douglass county, Oregon, I came across a white squirrel (*Sciurus fessor*). This squirrel is abundant in the neighborhood, and is remarkable for the constancy of its coloration, this being, I believe, the first recorded instance of an albino of the species. The coloration was white with a slight buffy tinge.—*J. K. Lum.*

SOME HABITS OF THE PINE SNAKE.—The note in January NATURALIST on the vibration of the tail in certain species of snakes, leads me to ask if this habit is not more general than has been supposed. The pine snake, *Pituophis melanoleucus*, is naturally sluggish, yet I have seen it when excited so vibrate the tip of the tail that it looked like a little fan, though I never detected any sound. Twice have I had the pine snake lay eggs in my study, the largest number being twelve, but they were as large as pigeon's eggs. For many years have I been on the lookout to find the egg nidus of this serpent, and only succeeded in the early summer of 1878. This was in an open sandy spot in the pines near here, about three inches below the surface. The deposit contained forty one eggs, but very much smaller than those laid in confinement. I had them all brought to my house, and made a vain effort to hatch them. At last I broke open a few, and found each to contain a young snake about five and a-half inches in length. The number of eggs and the size of the young snakes severally compared with the size of the egg much surprised me.—*S. Lockwood, Freehold, N. J.*

NOTES ON THE FISH-HAWKS.—In the "Naturalist's Guide" (1877), Part XI, "Catalogue of the Birds of Eastern Massachusetts," by C. J. Maynard, on page 134, is the following note, viz.: "*Pandion carolinensis* Bon., fish-hawk. Not a common summer resident, growing less so every year. Perhaps a few breed in the interior, but it is doubtful." Mr. Maynard also placed the bird in his list of "regular spring and autumn migrants," *vide* page 165.

I was much surprised when I read this note, as no bird is more familiar in this locality than the fish-hawk. It is with us a regular summer resident, arriving early in the month of March, and departing late in November, and breeds every season quite abundantly. From more than a quarter of a century's personal obser-

vation, I can attest that these hawks have not perceptibly diminished in numbers in this vicinity, and I can find a dozen or more nests of this species, each within an hour's drive of my home, which have been occupied by them every season for years, and in which they have annually reared their young. For nearly nine months of the year I can look up any day and almost any time of day and see one or more fish-hawks watching for prey, or going to and from the nest. Some of the nests are located near the banks of Taunton Great river, or on the shores of Mount Hope and Narragansett bays, and some are situated a mile or more from the water. Perhaps I live in a paradise for fish-hawks, but I should not have been more surprised to have read that the robin, blue-bird and song sparrow were uncommon summer residents, and that but few of them bred in this region. Though not so numerous as swallows or blackbirds, if the phrase "common summer resident" is applicable to any representative of our avifauna, it is applicable to *Pandion haliaetus*. The osprey begins to build a new, or much more commonly, to repair an old nest soon after their arrival. From two to four eggs are the usual complement, and incubation commences in May. While the female is setting, the male brings her food, and at times takes charge of the eggs as the mate goes off for an airing. One of the pair is on or in sight of the nest from the time incubation begins until the young are able to shift for themselves. I have repeatedly seen the female on the nest, and her mate perched on a limb of the tree preening his feathers or murmuring a not unmusical strain, evidently as a solace to his companion, while robins, blackbirds and sparrows lit upon the branches and sang their melodious refrains apparently unnoticed by the hawks.

Harmless to the agriculturist, protected by the fisherman, watched with intense interest by all who care for our birds, second to none in the matchless majesty of his mien, the fish-hawk is seldom molested save by the oölogist and ornithologist, or the mere collector of eggs.—*Elisha Slade, Somerset, Massachusetts.*

POLYMORPHOUS ANODONTÆ.—Nearly all collectors of shells are familiar with the extensive synonymy of the European *Anodonta cygnea*. Dr. Lea, in his Synopsis of the Unionidæ, reduces to its synonymy more than one hundred specific names. It would seem that, in their descriptions of shells, the Old World naturalists have given specimen characteristics rather than more or less permanent species diagnoses. This unfortunate polymorphous shell has thus afforded abundant material to the mere species monger, and has no doubt been a "thorn in the flesh" to youthful collectors. This European shell, however, finds a rival, though on a much less extensive scale, among its American relatives. For

some years the writer has been receiving specimens of a polymorphous *Anodonta*, ranging geographically from New York to Western Iowa, including the important streams throughout this entire range. These shells have been received under the various specific names of *Anodonta grandis* Say; *A. plana* Lea; *A. decora* Lea; *A. hockingensis* Moores, MSS.; and *A. somersii* Moores, MSS. A very careful diagnosis of the exo-skeleton of all, and the soft parts of some of these, has convinced me of their specific identity. The following observations are based, in part, upon correspondence from various gentlemen who have kindly forwarded me specimens for examination.

In Keokuk lake, about five miles from the city of Muscatine, Iowa, *Anodonta grandis* is found in great abundance. The shells vary in shape from a short full round form to a long and flat form; some are quite thick, others remarkably fragile for their size. For some unexplainable reason, as Prof. Witter writes, the young of *grandis* are rarely taken in this lake. Now, this remarkable diversity of form in this single locality is a fair representation of the increasingly proximate gradation in these above-mentioned species from New York to Western Iowa. The form known as *decora* Lea, from New York could not be distinguished readily from the *grandis* at Muscatine. The shells from that State are less heavy than from any other section represented in my cabinet. The Eastern forms are more compressed as to the beaks, rather more inflated, and having the posterior dorsal slope rather more oblique. From Ohio were received forms with much thicker shells, and white prismatic nacre. Both *decora* and *plana* from that State has a much more brilliantly colored epidermis than any of the more Western forms. In this respect they sustain to *grandis* essentially the same relation that the brilliantly colored *Unio siliquoides*, sustains to *U. luteolus* Laur., of which it is only a variety. In Indiana, Illinois, and Iowa, the most marked difference appear to be in the coloration of the nacre, which varies from white to a very deep salmon, the latter being the most constant color in the Western limit. The two species described by Mr. Moores, mentioned above as manuscript descriptions, are, beyond doubt, the young of *grandis*. Carefully comparing all my specimens, some sixty in all, with typical *grandis*, the conclusion reached was that these forms are all varieties of Mr. Say's shell, which was further strengthened by the fact, that being arranged geographically, from the East to the Mississippi, the former gradually approach the shell described by Mr. Say in 1829. Their differences correspond in general with the modifications of the mantle, some of them being sexual, but the major part may be explained on the basis of distribution and the changes in environment which this implies.—*R. Ellsworth Call, School of Science, Dexter, Iowa.*

PRELIMINARY NOTE ON BRANCHIPOD CRUSTACEANS.—In an isolated small pool, with a white clay bottom, containing milky colored fresh water near Maspeth, Long Island, I found in January last immense numbers of a full-grown, transparent species of Branchipod, which transparency as well as some morphological differences I adjudge to be owing to the fact that Branchipods and many Entomostraca, so much depend on their physical surrounding, as pointed out by Prof. A. S. Packard, Jr., in his paper, "Synopsis of the Fresh-water Phyllopod Crustacea." Pale or transparent "races" of Branchipods have repeatedly been recorded in zoölogical journals. The morphological differences, together with a hermaphrodite, a Chirocephalus and gradual transitory stages between this pale race and *Enbranchipus vernalis* Verrill, I shall soon endeavor to bring to notice.—*Carl F. Gisslers.*

[See Schmankewitch's paper on the influence of external circumstances on the organization of animals. Zeits. Wissen. Zoologie. XXIX, 1877.—*Editors.*]

A NEW SYNTHETIC TYPE.—At a recent meeting of the Zoölogical section of the Russian Association of Naturalists, Kovalevsky gave an account of *Cæloplana metschnikowii*, a new form from the Red sea, intermediate between the Cœlenterates and the Planarian worms. In its outer form it resembles the Planarians; is gray above, white below, and about three lines in length by two in breadth. The mouth is a slit-like opening in the middle of the ventral surface, and communicates with a four-lobed stomach which resembles most nearly the "funnel" of the Ctenophora; from it originate a large number of canals which radiate to the periphery of the animal and open into a ring canal which bears many cæcal appendages. On the dorsal surface, almost directly over the mouth, is a vesicle containing a number of vibratile otoliths. On either side of this otocyst is a sheath from which can be protruded a long retractile tentacle. Each tentacle is branched and corresponds in shape to those of *Cydroppe* and *Eschscholtzia*, only they have no central canal but are composed of muscles. The nervous system and genitalia were not observed. The body is covered above with vibratile cilia.—*J. S. K., abs. Zool. Anzeiger*, III, p. 140, 1880.

ZOOLOGICAL NOTES.—According to Mr. R. B. Roosevelt, the fish hatching commission have raised hybrids between the following fishes: Salmon trout with white fish; salmon trout with brook trout; brook trout with fresh water herring, with California salmon, and with the California mountain trout; shad with striped bass and with herring. Of these crosses there are the young, now in the hatching-house, of the salmon trout brook trout, brook trout California salmon, and brook trout California brook trout. It is observable of all hybrids that they are usually more shy and wild than either of their parents, and that in appear-

ance they generally favor their larger parent. The cross between the brook trout and California salmon and the salmon trout and brook trout bid fair to be fine fish. Those now in the hatchery are eight inches long. It is to be hoped that further careful experiments may be made to ascertain whether these hybrids are fertile, and can produce fertile offspring. Apropos of fertile hybrids certain journals have stated that a mule in Paris has had six young, from a horse, ass and a zebra.—Mr. C. C. Lobingier, of Allegheny county, Pennsylvania, states in the *American Agriculturist*, for May, that the copperhead snake swallows its young; that he took out thirty-four young from three and a half to six inches long from four old ones. In the April number of the same paper it is claimed that rattlesnakes swallow their young. Compare the *NATURALIST* for May, 1868 (vol. II, p. 133).—The report on the Florida Reefs, by Louis Agassiz, is reprinted in the *Memoirs of the Museum of Comparative Zoology*, vol. VII, with the addition of twenty-one beautiful plates, illustrative of the reef-building corals, and an additional plate of the coralline plants.—Dr. Harrison Allen figures and describes a foetal walrus in the *Proceedings of the Academy of Natural Sciences of Philadelphia*.—Dr. Evarts describes in the *American Monthly Microscopical Journal* a new species of *Ophrydium* (*O. adæ*), and Prof. D. S. Kellicott gives an account of a new *Argulus* (*A. stizostethii*).—New Diptera are described by Mr. S. W. Williston, in the *Transactions of the Connecticut Academy*.—An Englishman's notions about the English sparrow are given in Mr. R. McLachlan's address to the members of the West Kent Natural History, Microscopical and Photographic Society; he concludes: "If the advantages of living in a free country have not so far intensified, in America, the ultra-radical proclivities of our sparrow, as to have eliminated from his nature those certainly good qualities he possesses here, I venture to predict our generous kinsmen on the other side of the Atlantic will end by tolerating him, and, probably, by an inward conviction that the *absence* of our sparrow would leave with them, as with us, a blank impossible to fill up."—The marine invertebrates of Vancouver and the Queen Charlotte's islands, coast of British Columbia, have been investigated by Mr. G. M. Dawson, and the species enumerated by Mr. J. F. Whiteaves, with descriptions of new forms by Profs. Verrill and Smith.—As a further contribution to the subject of insect-destroying fungi may be cited a short article in the *Comptes rendus*, by MM. Brongniart and Cornu on an epidemic among *Syrphus* flies caused by a fungus (*Entomophthora*).—A new illustrated work on the *Pediculi*, by E. Piaget, to form two quarto volumes, is announced to be published at Leyden, by E. J. Brill, who desires subscriptions.